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| <b>(51) International Patent Classification <sup>6</sup> :</b><br><b>C10G 70/04, C01B 3/50, C07C 7/00</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | <b>A1</b> | <b>(11) International Publication Number:</b><br><b>WO 99/31201</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |           | <b>(43) International Publication Date:</b><br>24 June 1999 (24.06.99)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>(21) International Application Number:</b> PCT/US98/25717<br><b>(22) International Filing Date:</b> 10 December 1998 (10.12.98)<br><b>(30) Priority Data:</b><br>08/991,655 16 December 1997 (16.12.97) US<br>09/207,685 9 December 1998 (09.12.98) US<br><b>(71) Applicants:</b> L'AIR LIQUIDE, SOCIETE ANONYME POUR L'ETUDE ET L'EXPLOITATION DES PROCEDES GEORGES CLAUDE [FR/FR]; 75, quai d'Orsay, F-75321 Paris Cedex 07 (FR). AIR LIQUIDE AMERICA CORPORATION [US/US]; Suite 1800, 2700 Post Oak Boulevard, Houston, TX 77056 (US).<br><b>(72) Inventors:</b> ENGLER, Yves; 54, avenue de la République, F-94300 Vincennes (FR). DUPUIS, Gerard; 57 Waldale Court, Walnut Creek, CA 94596 (US).<br><b>(74) Agents:</b> GESS, E., Joseph et al.; Burns, Doane, Swecker & Mathis, LLP, P.O. Box 1404, Alexandria, VA 22313-1404 (US). |  |           | <b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).<br><br><b>Published</b><br><i>With international search report.</i> |
| <b>(54) Title:</b> PROCESS FOR RECOVERING OLEFINS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>(57) Abstract</b><br><br>A process for recovering olefins from a gas stream containing olefins and hydrogen. The process comprises compressing the gas stream in at least one compression stage to form a compressed gas stream, contacting the compressed gas stream with a membrane at conditions effective to obtain a permeate stream rich in hydrogen and a retentate stream depleted in hydrogen, and introducing the permeate stream into a pressure swing adsorption system at conditions effective to obtain a nonadsorbed stream rich in hydrogen and a desorbed stream comprising olefins.                                                                                                                                                                                                                                     |  |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |